

Subacute Thyroiditis following vaccination with COVID-19 mRNA vaccine

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Introduction:

Subacute thyroiditis is a self-limiting post-viral inflammatory disorder occurring in 3 phases (hyper-, hypo-, and euthyroidism) Post-vaccine thyroiditis has also been reported, but is rare.

Case description:

A 36 year old Emirati female presented to our clinic with generalized fatigue, mild to moderate vague neck pain, intermittent palpitations, and loss of appetite 2 weeks after receiving her first dose of Pfizer-BioNTech mRNA vaccine against COVID-19. Clinical examination findings and laboratory test results were consistent with subacute thyroiditis. Patient is a mother of 5 healthy children, youngest is breast-fed infant (11 months old). There was no history suggestive of postpartum thyroiditis and no family history of thyroid dysfunction.

Physical examination at initial visit showed mild tachycardia, and a normal blood pressure. She weighed 66 kg. Thyroid function tests revealed a suppressed TSH of 0.011 μ IU/mL, high Free T4 of >100 pmol/L, and Free T3 FT3 of 29.6 pmol/L. Both TSH receptor antibodies, and Thyroid antibodies (TPO) were negative. Thyroid scintigraphy showed decreased uptake in both lobes. Thyroid ultrasound showed hypoechoic heterogeneous echotexture of the thyroid gland with vascular conglomerate and micro-calcification, along with normal sized reactive lymph nodes at sternal angle.

Symptoms aggravated through the next week; patient dropped 3kg of her body weight and her palpitations increased, with a recorded resting heart rate between 120-130 beats/min. TSH decreased to 0.001 μ IU/mL while FT4 remained high, with an improvement to 90 pmol/L. Subsequently, the patient started to regain weight. Palpitations improved within a month. She developed a biochemically hypothyroid picture followed by clinical and biochemical euthyroidism after one more month. Second dose of the vaccine was uneventful. Last evaluation was 10 months later; TSH, FT3 and FT4 were all in normal range, acute-phase reactants were completely normal and in complete remission.

Conclusion:

The exact mechanism for post-vaccination subacute thyroiditis remains unknown, vaccine adjuvants may induce diverse autoimmune and inflammatory reaction. Subacute thyroiditis has rarely been reported with other COVID-19 vaccines contains no Polyethylene glycol (PEG). A possible cross-reactivity between thyroid cell antigens and spike protein of the coronavirus produced by mRNA vaccines might be responsible. Further research is needed to investigate the incidence of subacute thyroiditis in COVID-19 pandemic days.

References:

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